Foreign Direct Investment and Economic Growth: The Role of Corruption Control in North Africa

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ABSTRACT: This paper aims to study the interaction of corruption control in the relationship between foreign direct investment (FDI) and economic growth in North African countries. To achieve this, econometric estimates were made using the Generalized Moments Method (GMM) in dynamic panel of the Five North African countries over the period from 1996 to 2019. The results obtained show that FDI combined with corruption control although having a positive sign has no effect on the economic growth of North Africa. In light of these results, recommendations have been made to make the fight against corruption in the FDI-economic growth relationship more effective, through decentralization, streamlining of administrative procedures and relaxation of tax regulations.

KEYWORDS: Corruption control, FDI, economic growth, North Africa, Panel data.

JEL Classification: B22, F21, C23

INTRODUCTION

FDI is an important element in the process of economic growth in all countries, its effect with economic dynamics is so important that it conditions the improvement of growth and economic competitiveness. The economic literature deals with the effects of FDI on growth, particularly in developing countries.

According to the latest World Investment Report (UNCTAD, 2017) highlights that global FDI flows are expected to reach nearly $1800 billion in 2017 and then $1850 billion in 2018, still well below the record recorded in 2007. Statistics from 2015 indicate that FDI flows increased by 38% to USD 1762 billion compared to 2014. This increase, the first since the 2008- 2009 financial crisis, is mainly due to a sharp increase in - cross-border acquisitions mergers. In contrast, Africa's share of FDI flows decreased in the same year by 7% (less than 54 billion USD). The reason for this decline is attributed to the oil crisis that has plagued since 2014. But the report estimates that a return to the rise in the region can be made, in 2016, because of the adoption of more liberal measures and the planned privatization operations of public enterprises.

FDI flows to Africa continued to fall in 2016 to $ 59 billion, down 3 %. The resumption of FDI to Egypt, the main recipient at the regional level, supported entry into North Africa. In contrast, low commodity prices have weakened economic prospects in sub-Saharan Africa and diminished investor interest.

Direct investment abroad is a key instrument for stimulating and improving competitiveness and for thriving the global economy. Several factors constitute an obstacle to the development of direct investment abroad, namely, the dysfunction of public institutions which discourages investment; corruption is among the symptoms of dysfunction, is an obstacle to investment. Where it is useful to study the relationship between corruption and investment.

This scourge is considered a threat to investment; it reduces the government and it diverts rigidities and then it prevents investment. According to Kaufmann (1997), corruption "fat the cogs".

Corruption also has effects on growth; it also has great consequences on the distribution of income because it mainly affects the poor capital intensities in production, which reduces the impact that investment and growth can have on employment, claims Ndikumana 2007.In fact, Ndikumana (2007) believes that empirical studies tend to corroborate the hypothesis of a positive correlation between corruption and public spending.

Corruption control, on the other hand, is used to measure the extent of corruption and the manner in which public power is exercised for private purposes. This variable takes into account all forms of corruption, including "the capture" of the state by

an elite (Brahim El Morchid, 2009). In the literature, corruption is assessed on the basis of the control of corruption that is - to - say of the indicator which assesses the efforts of States in the fight against corruption.

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1. LITERATURE REVIEW

There are several empirical studies that have been done in recent years on the relationship between corruption and economic growth. Corruption can affect economic growth through its effect, either on investment, or on the formation of human capital, or on the composition of public spending.

The first works relating to corruption in economics date back to authors such as Klitgaard (1988), Rose - Ackernam (1989), Lui (1974). But Mauro's work (1995) constitutes the first empirical evaluation on the question. This author highlights the harmful nature of corruption on investment and growth. Finally, there is the central role played by the state in the advent of development.

P. Mauro analyzes a database developed by BI, during the period (1980 - 1983), on a set of countries which brings together 70 economies. This database is formed by indices of corruption, bureaucracy (red - tape) efficiency of the judicial system and degree of political stability.

The purpose of his study is to identify the channels through which corruption as well as other institutional factors can affect economic growth and to quantify the degrees of these effects.

In addition, V.Tanzi and H.Davoodi (2000) have developed a study in which, they have examined a few voices through which, corruption can affect economic growth. The authors find that this negative relationship also exists, between the corruption perception index and the economic growth rate.

Darrat, Kherfi, and Soliman (2005) studied the effect of FDI on economic growth by carrying out a comparative analysis on 23 countries belonging to two different regions: North Africa and the Middle East and Central and Eastern Europe. Using double least squares over the period 1979 - 2002, they find that FDI flows stimulate economic growth only in the candidate countries for the European Union. The effect of FDI at the level of North African and Middle Eastern countries, and non-EU candidate countries, is negative or non-existent. The authors argue that the candidacy to become a member of the EU seems to be a catalyst for a wider and more effective application of reforms, which would have contributed to the positive effects of FDI flows.

Azman - Saini & al. (2010a), study the link between FDI, economic freedom and economic growth on a panel of 85 countries over the period from 1975 to 2004. Using the generalized moments method, they find that FDI alone does not have a positive direct effect on economic growth. They show in particular that the effect of FDI is linked to the level of economic freedom in the host country.

Zghidi et al. (2016) are conducting a study on the interaction between FDI, economic freedom and economic growth. They use a panel of 4 countries, namely Tunisia, Morocco, Algeria and Egypt. Their analysis is carried out on average data of 5 years between 1980 and 2013. Using the generalized moments method, they highlight a positive relationship between FDI and economic growth. They also find that economic freedom appears to be complementary to FDI. They come to the conclusion that countries that promote great freedom of economic activity derive more from the presence of FMNs.

2. METHODOLOGICAL APPROACH

In this section, we first specify the study model and the variables. We then present the data collection sources used and finally the estimation method.

2.1. Specification of the model, presentation and signs of the variables

2.1.1. Model specification

To test the hypothesis that corruption control improves the effect of inward FDI flows on economic growth in North Africa, we were inspired by the Alaya and al (2004) model which has already served as a reference for estimating the role of interactive variables in the FDI and economic growth relationship in other communities and which - itself is based on the model of Mankiw & al (1992). It is specified as follows:

$\log (Y_{it}) = \alpha X_{it} + \beta Z_{it} + \Phi \, VLA_{it} + f(i) + \varepsilon_{it}$ (1)

Y_{it} represents the country's GDP per capita (i) at the period (t) ;

X_{it} and Z_{it} the sets of control variables from country i to period t;

f (i) represents the fixed effects specific to each country ;

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VLA_{it} the interactive variable that allows us to understand the conditions that allows FDI to play a full positive role in economic growth. ε_{it} the specification error.

In our model, the vector X_{it} also contains the variables included in the Solow model, namely the physical capital (CPHY) and the human capital (CH). On the other hand, the vector Z_{it} includes for its part, in addition to the interest variable which is the interactive variable IDE * CC, other variables that we consider relevant to explain growth in North Africa, like the delayed variable of a period of GDP per capita, foreign direct investment (FDI), control of corruption (CC) and political stability.

Thus specify in panel, the model to be estimated is written:

$$\text{Log } (Y_{it}) = \Psi \text{ Log } (Y_{it-1}) + \alpha_1 \text{ Log CPHY}_{it} + \alpha_2 \text{ Log CH}_{it} + \beta_1 \text{ FDI}_{it} + \beta_2 \text{ STAB}_{it} + \beta_3 \text{ CC}_{it} + \beta_4 \text{ STAB* FDI}_{it} + \Phi \text{ VLA}_{it} + f(i) + \varepsilon_{it} \quad (2)$$

2.1.2. Presentation and signs of the model variables

The dependent variable is the logarithm of GDPH per capita at constant price (Y) i.e. nominal GDP divided by the GDP deflator, all related to the total population. This indicator has been used by several economists such as Solow (1956) and Lucas (1988).

The independent variables are:

- Investment in Physical Capital (CPHY): It designates all acquisitions of productive elements and basic infrastructure (roads, dams, bridges, schools, hospitals). It is measured by the ratio of gross fixed capital formation to GDP. According to growth theories, improving the quality of infrastructure lowers (transport, energy ...) costs and therefore stimulates demand and supply, which is likely to promote competitiveness and economic growth (Gannon and Liu, 1997). The expected sign is positive.

- Human Capital (CH): This variable refers to the stock of human capacities created or innate and investment in human beings (expenditure on education, health and food). It will be measured in our work by life expectancy at birth. The theoretical and empirical literature shows that the accumulation of the latter is a source of growth. We expect a positive sign of its estimated coefficient.

- Net FDI inflows as a percentage of GDP (FDI): Given that the flow of inward FDI reinforces the physical capital stock existing in a country; it can only positively influence economic growth. The expected sign of its coefficient is positive.

- The control of corruption (CC) is evaluated on the basis of an indicator which assesses the efforts of States in the fight against corruption. The construction of this indicator is done by the World Bank Institute in charge of governance issues around the world. Based on expert advice, each country is awarded a score varying between - 2.5 and + 2.5. The country with a score of - 2.5 is considered to be the one with a non-existent anti-corruption effort, and the one with a score of + 2.5 means absence of corruption. Most theoretical and empirical work shows that the control of corruption positively affects the attractiveness of FDI and economic growth. The expected sign of the coefficient of the corruption control variable is positive.

- STAB political stability includes the absence of civil wars and all kinds of insecurity. The construction of this indicator is done by the World Bank Institute in charge of governance issues around the world. Based on expert advice, each country is awarded a score between - 2.5 and + 2.5. The country with a score of - 2.5 is considered to be the most unstable and the most violent and the country with a score of + 2.5 is the most stable and without violence of all kinds. The expected sign of the variable coefficient is positive.

- The FDI * STAB variable reflects the mechanisms by which political stability influences the relationship between FDI and economic growth. With regard to literature, the expected sign of the coefficient of this variable is positive.

- The interactive variable FDI * CC reflects the mechanisms by which the control of corruption influences the relationship between FDI and economic growth With regard to literature, the expected sign of the coefficient of this variable is positive or negative.

2.2 Data sources, characteristics of variables, correlations and estimation method

2.2.1 Data sources

In order to estimate the parameters of the model below, the data were extracted from different sources depending on the variable. The table 1 presents the sources of the data used.

Table 1. Data sources

Variables	Notations	Data sources
GDP per capita	GDP H	World Bank (WDI, 2021)
Physical Capital	CPHY	World Bank (WDI, 2021)
Human capital	CH	World Bank (WDI, 2021)
Direct Foreign Investment	FDI	World Bank (WDI, 2021)
Political stability	STAB	World Bank (WDI, 2021)
Corruption control	CC	World Bank (WGI, 2021)

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Details of sources :
WDI, 2021 : World Development Indicators (2021)
WGI, 2021: World Government Indicators (2021)

Source: The author.

The sample consists of the six countries of North Africa, namely Algeria, Morocco, Egypt, Tunisia, Mauritania and Libya. Due to the lack of data for all countries, our study covers the period from 1996 to 2019. These data are compiled in Excel and imported into econometric software (STATA 13) to be processed using the appropriate statistical tools.

2.2.2. The estimation method

The estimation of growth models with the fixed effects method or random effects as carried out by Barro (1991) or Sala - i - Martin X. (1994) presents certain limits. The results obtained from these studies are therefore altered by the problems of correlation of the specific effects with the terms of error and the endogeneity of certain explanatory variables.

The estimation method which makes it possible to take into account these different problems and which we propose within the framework of this work is the generalized moments method (GMM) originally developed by Holtz -Eakin et al, (1988) and Arellano and Bond (1991). There are two types: the GMM estimator in first differences and the GMM estimator in system.

The GMM estimator in prime differences (by writing the equation to be estimated in prime differences) eliminates specific individual and temporal effects. Values in delayed levels of two or more periods are used as instruments of the explanatory variables in first differences, with the assumption that errors in the equation in level are not correlated in series. This procedure has as advantages the elimination of the biases generated by the omission of certain explanatory variables. The use of instrumental variables makes it possible to estimate the parameters more rigorously and to have better results, even in the event of a measurement error (Bond et al, 2001). This estimator is not without defect, however: in fact, the delayed values of the variables in level are not good instruments of the variables in first differences.

The GMM estimator in the Blundell and Bond system (1998) exploits the assumptions relating to the initial conditions in order to obtain moment conditions which remain valid even for persistent series. The validity of the additional instruments is tested using the validity tests of the Sargan or Hansen instruments. These tests determine whether the instruments are on the whole exogenous or not.

3. RESULTS AND DISCUSSIONS

The regression results are summarized in the table below:

Table 2. Estimated results

Explanatory Variables	Coefficients	Probabilities
Ln GDP H L1	(0,7628113)***	0,000
FDI	(0,0149736)	0,284
Ln CPHY	(0,5841501)***	0,000
Ln CH	(0,5017397)	0,772
CC	(0,0236807)	0,346
STAB	(0,1946512)	0,390
FDI *STAB	(0,0014172)	0,551
FDI *CC	(0,0018519)	0,480
Constant	(1,7843)**	0,006
Sargan test		0,0779
Wald Chi2	1084,64	
Prob>Chi 2		0,000
Number of instruments	46	

Source: the author

Note: *** Significant at 1%, ** Significant at 5%, *Significant at 10%

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It appears that the gross domestic product per capita (PIBH) delayed by a period, physical capital (CPHY) and human capital (CH) have a positive and very significant influence on the economic growth of the countries of North Africa. Variables measuring political stability (STAB), corruption control (CC), foreign direct investment (FDI) and the FDI * STAB variable as well as our interest variable, it is - to - say the variable FDI * CC have positive, but not significant signs.

For the Sargan test, the results of p- values less than 5% validate the choice of instruments. Wald's test results show that the model is generally significant.

The results above - show that the interaction variable FDI * CC has no effect on economic growth. They corroborate those obtained by Kolstard and Wiig (2013), Okada and Samreth (2014) and Abd Rahman (2015) who have shown in their respective work that the control of corruption does not always improve the effect of FDI on economic growth in the PED. Rather, they believe that controlling corruption can rather hamper the efficiency of the role of FDI in economic growth in host countries.

Likewise, these results show that whatever the quality of governance, foreign investors come to developing countries to make their profits. It is even likely that corruption in host countries, in some cases, could stimulate the entry of FDI, because foreign investors can take advantage of the dishonest methods used by employees to circumvent heavy and invasive regulation. Corruption even allows them to speed up administrative procedures in order to obtain authorizations to start their projects by saving time.

Political instability increases the uncertainty of the environment in which FDI takes place, and therefore decreases the incentive for transnational or multinational corporations to invest. As such, it reduces both the volume of FDI and its efficiency. In addition, the North African countries suffering from political instability are generally characterized by insufficient and deteriorated infrastructure and poor governance since 2011. On the other hand, good institutions characterized by a stable political climate could guarantee a more efficient allocation of factors, allow investing in higher-yielding activities, reducing uncertainty, promoting convergence between private and social returns and facilitating coordination between economic agents.

Political and socio-political instability affects economic growth both directly through the breaks caused in production processes and indirectly through the weaknesses exerted on the accumulation of factors of production. They are comparable to those of Fosu (1992) which also admits the double channel of influence of instability on economic growth.

4.   CONCLUSION

This work emphasizes the evaluation of the role of corruption in determining the economic circuit, namely FDI and economic growth, and on the other hand to highlight proposals from which development policies can be supported to benefit from the virtues of FDI. Our research work takes North African countries during the period 1996 – 2019. To achieve this, we were inspired by the Alaya et al (2004) model. The estimation technique used here is the Generalized Moments Method (MMG) in system.

The theoretical predictions that FDI combined with corruption control positively influences economic growth have not been verified in the case of North African countries because, as the estimates show, the coefficient associated with the interactive investment Direct Foreign - Corruption control is positive and not significant. Indeed, almost - all the countries of North Africa have been trying for some time to fight corruption.

The econometric analysis, based on the various tests, also highlights the following important points:

1 ° - It is important to agree that corruption also has effects on growth; it also has major consequences for the distribution of income because it mainly affects the poor capital intensities in production, which reduces the impact that investment and growth can have on employment. Political risks should not be overlooked if North African countries are to achieve and maintain high growth rates. Having not given a central place to the problems of political instability, the various reforms undertaken in terms of liberalization and promotion of FDI have not always made it possible to support growth in the long term. To do this, the countries of North Africa must ensure the quality of the institutions to prevent and resolve internal and external conflicts, to ease religious and ethnic tensions, reduce the military presence in politics and improve government stability.

2 ° - Investment in physical capital always remains the engine of economic activity regardless of the political and social environment. Although the study does not distinguish private investment from public investment, these results suggest that revitalizing the private sector is crucial in the process of developing the African economy.

3   ° - Human capital also has a decisive role in economic growth. But the realization of its potential largely depends on the incentives offered by the political and economic environment, in particular the availability of technological capital capable of absorbing it and the political stability conducive to its production.

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